

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLICATION NO. 09/615,708

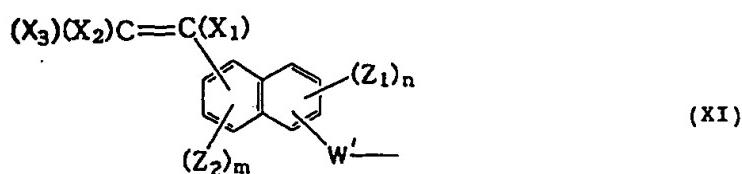
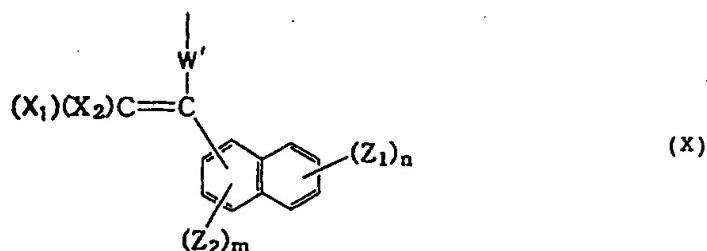
AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

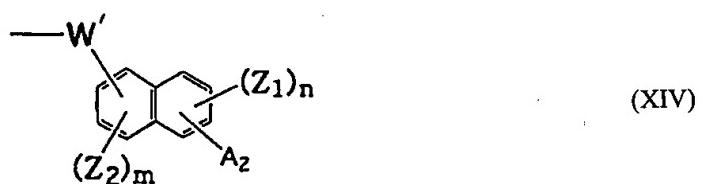
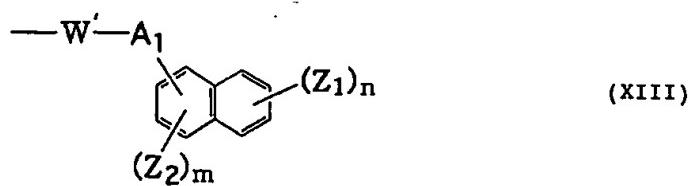
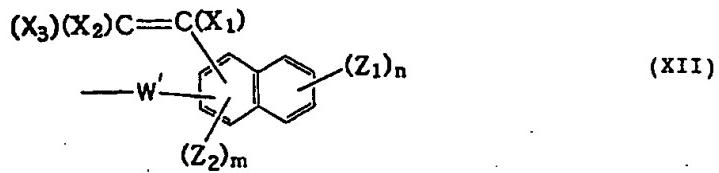
LISTING OF CLAIMS:

Claims 1-11 (canceled).

Claim 12. (previously presented): A bottom anti-reflective coating material composition comprising a polymer light absorbent having at least one group represented by the following formula (X), (XI), (XII), (XIII), (XIV) or (XV) on the side chain and a thermal cross-linking agent:



AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLICATION NO. 09/615,708



wherein W' represents a divalent linking group, X₁ to X₃, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group or -(X₄)_p-R wherein R represents an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms or an aralkyl group having from 7 to 20 carbon atoms, which may have a

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLICATION NO. 09/615,708

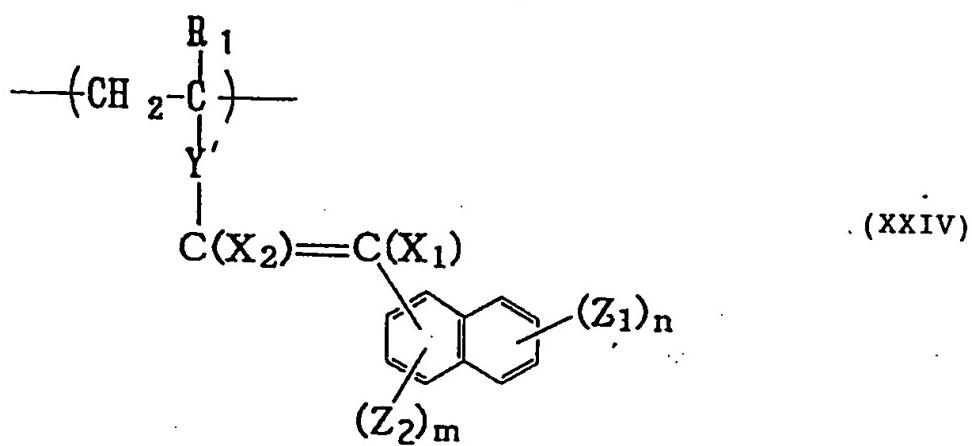
substituent, X_4 represents a single bond, $-CO_2-$, $-CONH-$, $-O-$, $-CO-$, an alkylene group having from 2 to 4 carbon atoms or $-SO_2-$, p represents an integer of from 1 to 10, Z_1 and Z_2 , which may be the same or different, each represents an electron donating group, m and n represent an integer of from 0 to 2 and from 0 to 3, respectively, and when m is 2 or m and n each is 2 or 3, the Z_1 groups or the Z_2 groups may be the same or different, A_1 represents a divalent aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent, and A_2 represents an aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent.

Claim 13 (canceled).

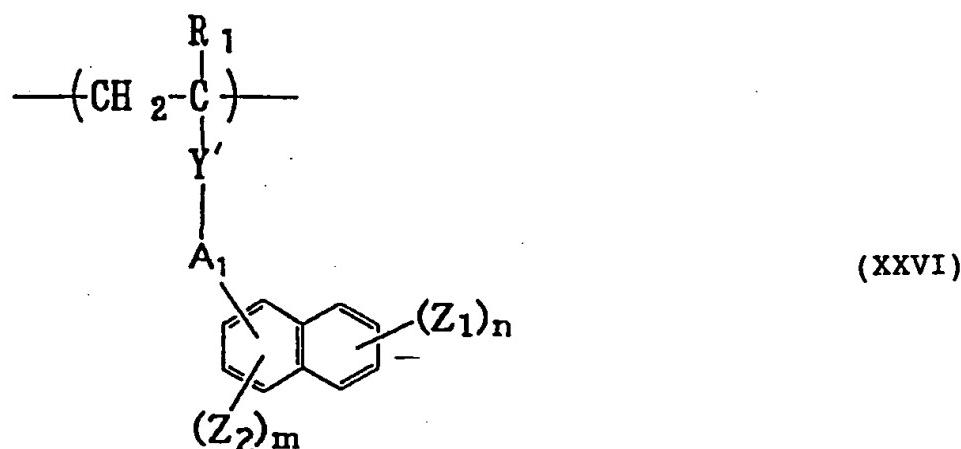
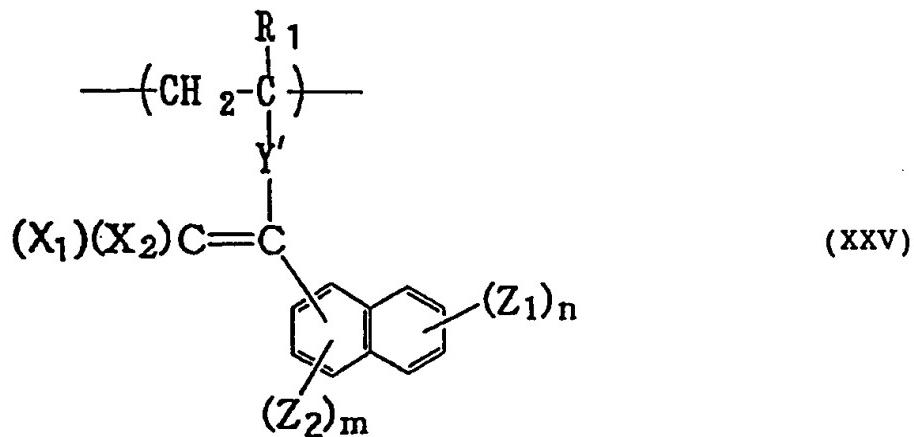
Claim 14 (previously presented). A bottom anti-reflective coating material composition comprising:

a polymer light absorbent having at least one repeating structural unit represented by the following formula (XXIV), (XXV) or (XXVI) and

a thermal cross-linking agent:



AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLICATION NO. 09/615,708



wherein R^1 represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, Y' in Formulae (XXV) and (XXVI) represents a divalent linking group and Y' in Formulae (XXIV) represents a $-\text{CO}_2\text{E}-$, $-\text{CONH}\text{E}-$, $-\text{O}\text{E}-$, $-\text{CO}\text{E}-$ or $-\text{SO}_2\text{E}-$ group, wherein E

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLICATION NO. 09/615,708

represents an aromatic ring group having from 6 to 14 carbon atoms, X_1 and X_2 , which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group or $-(X_4)_p-$ R wherein R represents an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms or an aralkyl group having from 7 to 20 carbon atoms, which may have a substituent, X_4 represents a single bond, $-CO_2-$, $-CONH-$, $-O-$, $-CO-$, an alkylene group having from 2 to 4 carbon atoms or $-SO_2-$, p represents an integer of from 1 to 10, Z_1 and Z_2 , which may be the same or different, each represents an electron donating group, m represents an integer of from 0 to 2, n represents an integer of from 0 to 3, and when m is 2 or m and n each is 2 or 3, the Z_1 groups or the Z_2 groups may be the same or different, A_1 represents a divalent aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent.

Claim 15 (canceled).

Claim 16 (original): A bottom anti-reflective coating material composition as claimed in claim 12, wherein Z_1 and Z_2 , which may be the same or different, each represents $-OH$, $-OR^4$, $-NR^5R^6$ or $-SR^4$ wherein R^4 represents a hydrocarbon group having from 1 to 20 carbon atoms, and R^5 and R^6 each represents a hydrogen atom or a hydrocarbon group having from 1 to 20 carbon atoms.

Claim 17 (original): A bottom anti-reflective coating material composition as claimed in claim 12, wherein A_1 and A_2 each represents a divalent or monovalent group of benzene, naphthalene, anthracene, phenanthrene or thiopene ring, which may have a substituent.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLICATION NO. 09/615,708

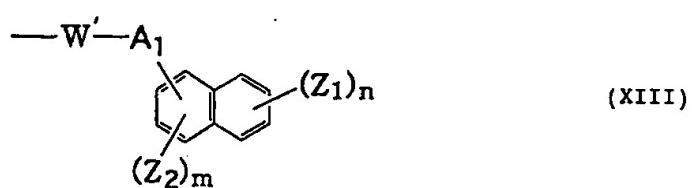
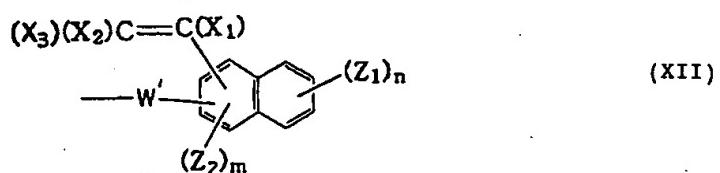
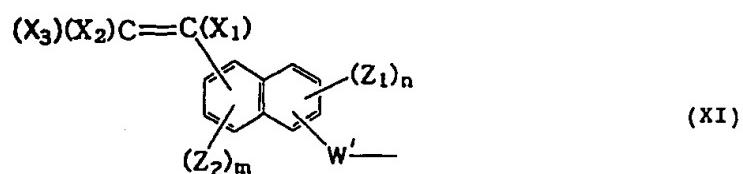
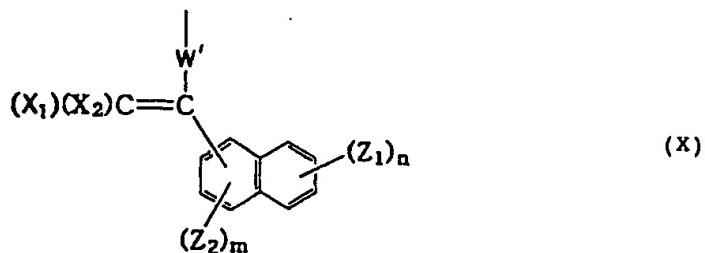
Claim 18 (previously presented): A bottom anti-reflective coating material composition as claimed in claim 12, wherein said polymer light absorbent contains from 2 to 50 wt% of the repeating structural unit represented by the following formula (XXVII):



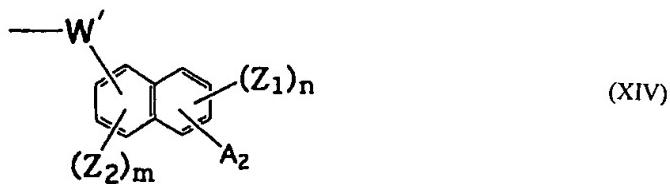
wherein R₂ represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, and B₁ represents a group containing -CH₂OH, -CH₂OR⁷ or -CH₂OCOCH₃ at the terminal wherein R⁷ represents a hydrocarbon group having from 1 to 20 carbon atoms.

Claim 19 (currently amended): A bottom anti-reflective coating material composition comprising a polymer light absorbent having at least one group represented by the following formula (X), (XI), (XII), (XIII), (XIV) or (XV) on the side chain:

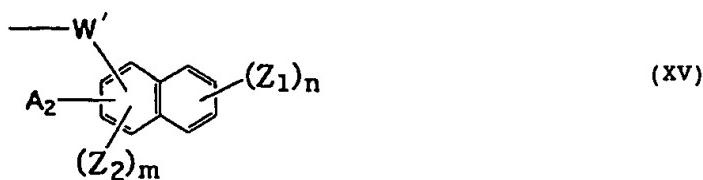
AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLICATION NO. 09/615,708



AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLICATION NO. 09/615,708



(XIV)



(XV)

wherein W' represents a divalent linking group, X_1 to X_3 , which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group or $-(X_4)_p-R$ wherein R represents an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms or an aralkyl group having from 7 to 20 carbon atoms, which may have a substituent, X_4 represents a single bond, $-CO_2-$, $-CONH-$, $-O-$, $-CO-$, an alkylene group having from 2 to 4 carbon atoms or $-SO_2-$, p represents an integer of from 1 to 10, Z_1 and Z_2 , which may be the same or different, each represents an electron donating group, m and n represent an integer of from 0 to 2 and from 0 to 3, respectively, and when m is 2 or m and n each is 2 or 3, the Z_1 groups or the Z_2 groups may be the same or different, A_1 represents a divalent aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent, and A_2 represents an aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent;

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLICATION NO. 09/615,708

and having from 2 to 50 wt% of a repeating structural unit represented by formula (XXVII):



where R₂ represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, and B₁ represents -CONHCH₂OH, -CONHCH₂OCH₃, -CH₂OCOCH₃, -C₆H₃(OH)CH₂OH, -C₆H₃(OH)CH₂OCH₃ or a group obtained by reaction of a group represented by -CONHC(CH₃)₂CH₂COCH₃ with formalin.

Claim 20 (canceled).

Claim 21 (original): A bottom anti-reflective coating material composition comprising the following components (a) and (b):

- (a) a polymer light absorbent claimed in claim 12; and
- (b) a melamine, guanamine, glycoluril or urea compound substituted by at least one substituent selected from a methylol group, an alkoxyethyl group and an acyloxymethyl group.

Claims 22-23 (canceled).

Claim 24 (previously presented): A method for forming a resist pattern comprising the steps of:

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLICATION NO. 09/615,708

dissolving a bottom anti-reflective coating material composition of claim 12 in a solvent to provide a bottom anti-reflective coating solution;

coating the bottom anti-reflective coating solution on a substrate to form a bottom anti-reflective coating;

curing the coating;

coating a photoresist on the cured bottom anti-reflective coating;

imagewise-exposing the photoresist to light;

optionally subjecting the photoresist to post-exposure baking; and

developing, rinsing and drying the imagewise-exposed photoresist to form a resist pattern.